

Unit 8  
Day 2  
Completing the Square

Find the value of  $c$  that completes the square.

$$x^2 + 8x + c$$

$$c = 16$$

$$x^2 + 8x + 16$$

Find the value of  $c$  that completes the square.

$$x^2 - 4x + c$$

$$c = 4$$

$$x^2 - 4x + 4$$

Find the value of  $c$  that completes the square.

$$x^2 + \frac{1}{3}x + c$$

$$\left(\frac{1}{6}\right)^2 = \frac{1}{36}$$

$$c = \frac{1}{36}$$

$$x^2 + \frac{1}{3}x + \frac{1}{36}$$

Goal is to create a perfect square trinomial that has a lead coefficient of 1.

1)  $x^2 + 10x + 17 = 0$

$$x^2 + 10x = -17$$

$$x^2 + 10x + 25 = -17 + 25$$

$$(x+5)^2 = 8$$

$$x+5 = \pm 2\sqrt{2}$$

$$x = -5 \pm 2\sqrt{2}$$

2)  $3a^2 + 12a + 2 = -16$

$$\frac{3a^2 + 12a}{3} = \frac{-18}{3}$$

$$a^2 + 4a = -6$$

$$a^2 + 4a + 4 = -6 + 4$$

$$(a+2)^2 = -2$$

$$a+2 = \pm i\sqrt{2}$$

$$a = -2 \pm i\sqrt{2}$$

3)  $n^2 - 9n + 15 = 8$

4)  $2y^2 - 3y + 8 = 0$

$$\frac{2y^2 - 3y}{2} = \frac{-8}{2}$$

$$y^2 - \frac{3}{2}y = -4$$

$$y^2 - \frac{3}{2}y + \frac{9}{16} = \frac{-64}{16} + \frac{9}{16}$$

$$\left(y - \frac{3}{4}\right)^2 = \frac{-55}{16}$$

$$y - \frac{3}{4} = \pm \frac{i\sqrt{55}}{4}$$

$$y = \frac{3}{4} \pm \frac{i\sqrt{55}}{4}$$

$$y = \frac{3 \pm i\sqrt{55}}{4}$$

$$\left(\frac{3}{4}\right)^2 = \frac{9}{16}$$

HOMEWORK  
Unit 8 Day 2  
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